

15¢

\$5.50 A YEAR

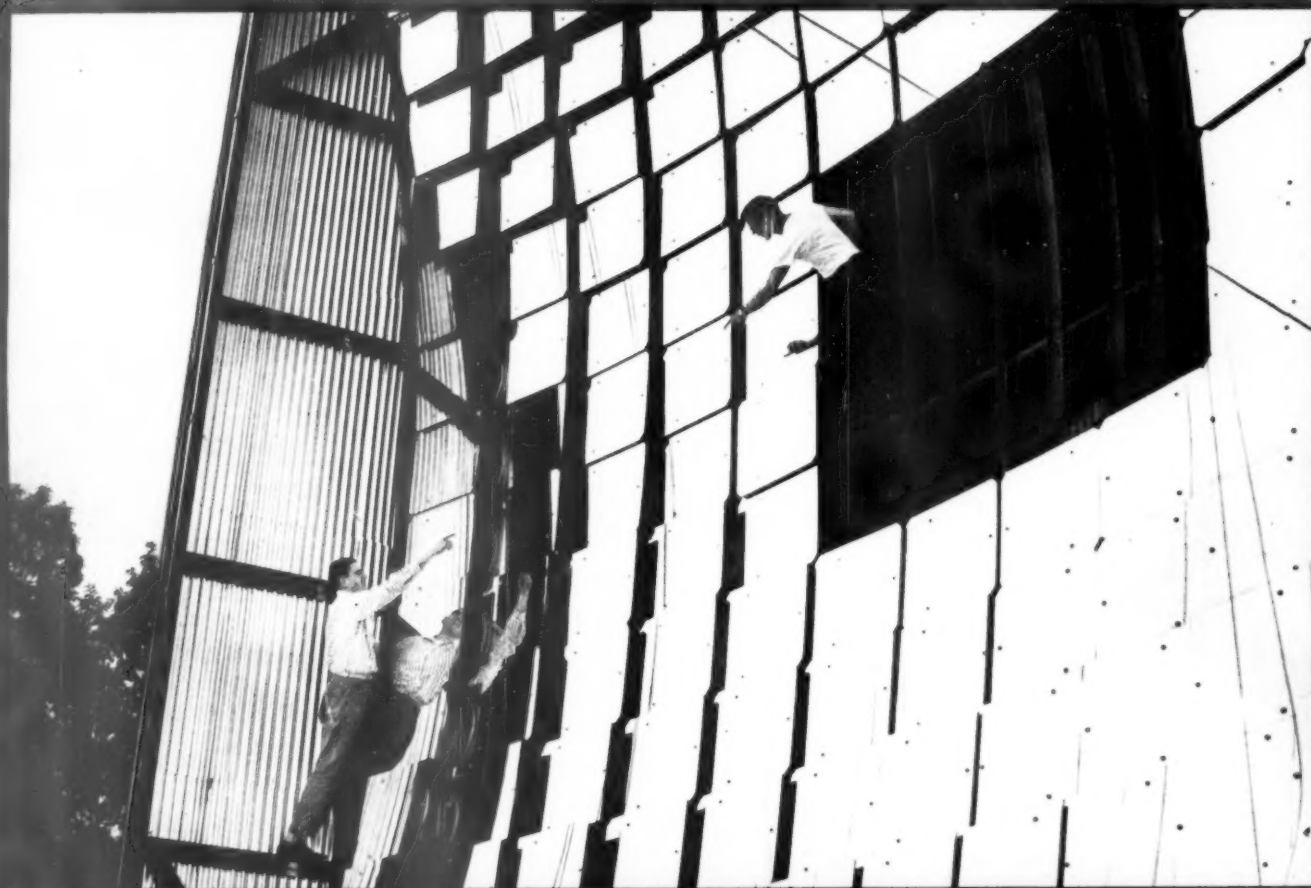
October 4, 1958

VOL. 74 NO. 14

PAGES 209-324

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Hot Mirrors

See Page 219

A SCIENCE SERVICE PUBLICATION

IMPORTANT TOOLS for the SCIENTIST!



900X "MICROBE HUNTER"

- The only Microscope in its class featuring **GRADE A** optics!
- Power Range 25X, 50X, 75X, 100X, 150X, 200X, 300X, 400X, 600X, 900X
- Full Range Fine Adjustment
- Safety Stop on Coarse Adjustment

This instrument—made to our rigid design specifications—has wide usage in schools, laboratories and law enforcement agencies. All of the most needed features have been incorporated to meet the requirements for diversified micro-studies. Highly recommended for serious hobbyist desiring exceptional quality at modest cost. Power range from 25X to 900X in 12 possible combinations. Gearing rack and pinion coarse focusing. Micro-motion fine focusing of full range—12 complete revolutions. Safety stop prevents over rise. 36mm dual surface (plano/concave) mirror. Fixed square stage, 70mm X 80mm. Rotating 5-hole, disc diaphragm. Three Huygenian eyepieces of 5X, 10X and 15X. Four achromatic objectives of 5X, 10X, 40X and 60X. Oversize base insures stability and protects objectives. Body tilts through 60°—perfectly balanced at any angle. Complete with upright, wooden carrying case.

F-338—List \$69.95.....Net \$39.95
(Add \$1.00 for postage and handling)

NEW! 30X-50X "STEREO-SCOPES"

- **STEREOSCOPIC Binocular Dissecting Microscope**
- **Wide Field 3-Dimension View**
- **Two Models to Choose From**

SEMI-PRO "STEREO-SCOPE": An especially engineered instrument featuring the stereoscopic and wide view field needed in biology, petrography, archeology, mineralogy, criminology, industry, agriculture, etc. Indispensable for inspection of large specimens, small parts—surface features of gross objects—dissection, etc. Fixed objective lenses and interchangeable eyepieces for a choice of either 30X or 50X. Prismatic binocular head with full interpupillary adjustment. Ground glass stage 3 5/16" x 3 5/16". Oversize modified horseshoe base. Rack and pinion focusing. Automatic stop prevents over rise. Overall height 9 1/4". Complete with fitted wooden carrying case.

F-337.....Net \$29.95
(Add 83¢ for postage and handling)

STUDENT "STEREO-SCOPE": A 30X stereoscopic binocular microscope—designed primarily for the student and serious hobbyist. Includes most of the features of our "Semi-Pro" model shown on this page. Fixed objective lenses and non-interchangeable eyepieces. All optics are achromatic. Ground glass stage measures 2 3/4" x 2 13/16". Overall height 7 3/4". Complete with fitted wooden carrying case.

F-335.....Net \$19.95
(Add 83¢ for postage and handling)

6250. THE SPLENDOR THAT WAS EGYPT. By Dr. Margaret Murray, F.S.A., F.R.A.I. A comprehensive, colorful survey of the grandeur that was Egypt, covering both its history and prehistory, its social conditions, religion, arts and sciences, language and literature. Hand-paper maps; over 200 illustrations in line, halftone, color. Pub. at \$10.00. Only 7.95

6292. LIGHTS OF AFRICA. By F. Spencer Chapman. The famed naturalist and his family travel for nearly a year in a caravan over 17,000 miles of Africa. Everyday experiences include giraffes, hippos, rhinos, and lions; Pygmies hunting in the Kuni Forest; Victoria Falls and Kilimanjaro—list as long as it is exotic. 60 enthralling photographs, half of them in full color. Pub. at \$5.00. Only 4.95

6240. THE CHILDREN'S ILLUSTRATED ENCYCLOPEDIA OF GENERAL KNOWLEDGE. Compiled by 13 expert contributors. This new and lavishly illustrated Encyclopaedia for children up to sixteen and seventeen is a reference book for practically every topic of general knowledge. Animals, 5,000 separate alphabetical entries have been divided into ten self-contained sections. "It should be in every family where there are children—with parents who must answer questions."—Daniel A. Poling in the Christian Herald. 480 pp. Special 5.95

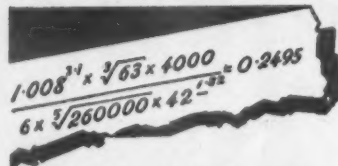
5331. PREHISTORIC ANIMALS. By Dr. J. Augusta and Z. Burian. The great and fearsome beasts of prey, extinct flowers, strange sea creatures—reversible ancestors of many of today's animals, birds and fish—from earliest plant life to the emergence of Man—captured in 55 full-color paintings. The extensive text brilliantly blends the artist's skill with up-to-date scientific knowledge. This unique, absorbing, imported book served as the basis for a film that won the Grand Prix at the Venice Film Festival. 10 1/2" x 13 1/2". Pub. at \$12.50. Only 9.95

5047. FIELD BOOK OF INSECTS. By Frank E. Lutz. All of the principal families, many of the genera and most of the commonly observed species of insects in the U.S. and Canada, recorded in a way to make recognition relatively easy. Much information regarding the habits of air, water, earth and underground insects. 300 plates illustrating almost 800 specimens, many in color. 4.50

4786. IN SEARCH OF ADAM. By Herbert Wendt. The greatest detective story of all time—the search for the truth about the origins of Man in the mists of the unrecorded past. Here, in one 550-page volume, is everything that is known about the kinship between humans and apes, the "missing link," and the mysterious lost races who may have been our first human ancestors. 48 pages of photos. Pub. at \$6.00. Only 5.00

9397. ANOMALIES AND CURIOSITIES OF MEDICINE. By George M. Gould, M.D., and Walter L. Fyle, M.D. An encyclopedic collection of rare and extraordinary cases, and of the most striking instances of abnormality in all branches of medicine and surgery, derived from an exhaustive research of medical literature from its origin to the present, abstracted, annotated and indexed. 12 halftone plates & 295 illustrations in the text. 982 pp. Pub. at \$12.50. Only 9.95

6135. THE COLUMBUS ATLAS. By John Bartholomew. Prepared by one of the world's finest cartographers, this new regional atlas of the world contains 180 pages of fully colored maps and an index of nearly 50,000 place names, with populations, keyed to the maps. All the plates have been hand-made by a highly intricate special color process, and their clarity, precision and complete accuracy make this atlas invaluable for everyone wishing to keep up with the complex affairs of today's world. 8 1/2" x 11". Pub. at \$10.00. Only 8.95



A 66-inch Slide-rule for your pocket, \$19.95



Slide Rule Open

You may use it for 30 days and if you are not satisfied repack and mail it back.

What our users say:

"It does all you claim—four or five figure accuracy without eyestrain or magnifiers. Half an hour's study is ample for its use."

E. B. "I use the GENIAC Calculator for all my slide rule work and need the extra digit which normal slide rules cannot give. I had to get one of my customers a GENIAC Slide Rule last month, after using mine in his office." E. & G. H. Textile Manufacturers.



Slide Rule Closed

COSMOTRON

- **MINIATURE ATOM SMASHER**

- **PRODUCES 75,000 VOLTS**

- **ABSOLUTELY SAFE**



In no sense of the word a toy or a gadget. The COSMOTRON is a scientific instrument capable of producing 75,000 volts—makes sparks up to 2" long—yet is absolutely safe because the current is infinitesimal. The science teacher—science lover—or hobbyist can perform experiments to astound students—friends—family. Makes smoke disappear—defy gravity—turns propellers at a distance—transforms atomic energy into light—makes artificial lightning—smashes atoms—demonstrates ionic space ship drive—and many other experiments. Constructed of the finest materials. Will do exactly—for instruction purposes—what generators that cost 3 to 10 times more will do. The perfect device to teach the secrets of atomic physics and electricity. Will hold an audience spellbound as it performs trick after amazing trick. Includes an experiment kit and illustrated experiment manual. Manual explains the "how" and "why." You will invent many new experiments of your own. A fine research tool that will give years of beneficial service to the institution or individual who owns one. In kit form or assembled.

Kit Form.....\$14.95
Assembled.....\$19.95

All Equipment Protected by 10-Day Return Guarantee & 90-Day Warranty

OLIVER GARFIELD CO., Inc. DEPT. SL-108-A, 108 East 16th St., New York 3, N. Y.

Please send me the following:

900X "Microbe Hunter" F338 @ \$39.95 (plus \$1.00 for postage & handling)..... 50X "Stereoscope" F337 @ \$29.95.....

30X "Stereoscope" F335 @ \$19.95 (Add 83¢ each)..... GENIAC Slide Rule @ \$19.95..... COSMOTRON: Assembled

@ \$19.95..... Kit Form @ \$14.95..... The books I have circled (Add 35¢ postage and handling on orders under

\$5.00) 6259 - 6262 - 6249 - 5331 - 5947 - 4786 - 6397 - 6135 -

NAME

STREET

CITY

STATE

METEOROLOGY

Put Radio In Hurricane

Balloon-borne radio transmitters promise to contribute greatly to a program designed to test the development of an automatic hurricane-tracking system.

► THE WEATHER BUREAU has definite plans to drop five balloon-borne radio transmitters into the relatively quiet eyes of 1958 hurricanes.

The first was placed in the eye of Hurricane Helene about 500 miles east of Palm Beach, Fla., at 1:06 p.m. EDT on Sept. 24.

The balloon carries a payload weighing about 20 pounds containing the high frequency radio transmitter. The inflated balloon measures about 12 feet in diameter.

The polyethylene balloon carries an instrument package, cylindrical in shape, 11 inches high, 11 inches in diameter. The instrument cylinder contains a mechanism for controlling the flight level of the balloon. The hurricane beacon package, when ready for loading into the bomb bay of the B-50 airplane used, weighs a total of 400 pounds.

The constant-level balloons destroy themselves in five hours to avoid any possibility of their becoming hazardous to aircraft. They are being released in the hurricanes' eyes as part of a program to test the development of an automatic hurricane-tracking system.

The balloons are being placed at different levels within the eyes, at altitudes from 5,000 to 50,000 feet. Weathermen will then study the coded messages sent by the radio transmitter to determine which level yields the most useful information for tracking the hurricane's path and predicting its position.

A hurricane's structure can be considered similar to that of a giant smokestack, some 30,000 feet tall.

Above 10,000 feet, the "smokestack" widens slowly. There is some evidence that the environment between 10,000 and 20,000 feet controls the storm's development. Cold air moving in and mixing with the warm air can choke its growth. It may also account for changes in the hurricane's direction.

The organization of winds in the turbulent core immediately surrounding the center of the hurricane holds the clue to the storm's rate and direction of motion for the subsequent 24 hours. This is one reason why dropping the radio transmitter into the "eye" can result in so much information for meteorologists.

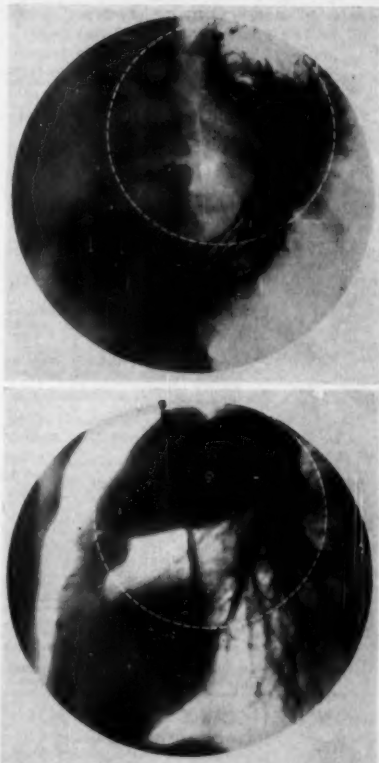
The balloons will not only aid forecasters in tracking, but will give them information on the forces at the storm's center that could not be obtained in any other way.

Reconnaissance airplanes can plot a hurricane's future path from readings of maximum winds taken in the four directions at equal distances from the storm's center as determined by radar.

Characteristics of hurricanes that still are puzzling meteorologists are the systematic eddies found throughout the entire storm and the observation that a hurricane seems to "know" where it is going.

The project is being conducted by the Weather Bureau's Hurricane Research Project in cooperation with the Geophysics Research Directorate of the Air Force Cambridge Research Center.

Science News Letter, October 4, 1958



DIAGNOSTIC AID—With Rauland's large screen image, the radiologist can see the whole stomach from the greater curvature to the duodenal bulb as shown in the upper photograph. In the lower photograph there can be seen, for example, the entire orientation of a catheter in its journey through the heart chambers. In both the photographs the area circled by the white dotted line corresponds to the image size provided by small screen X-ray image tubes.

TECHNOLOGY

Device Aids Fluoroscopy

► AN APPARATUS that will make X-ray diagnosis by fluoroscope faster, safer and easier has been developed.

The apparatus is built around a newly developed eight-inch amplifier tube that allows the radiologist to view two and one-half times as much area as is possible with the five-inch tubes presently employed. And the image he sees is 350 times brighter.

The five-inch tube now in general use has not been adequate to permit doctors to see the whole area of such organs as the adult heart, brain or colon.

Because the new tube produces an enlarged picture, it will take the doctor less time to find what he is looking for, and thus reduce the patient's exposure time. The Picker X-Ray Corporation is the producer of the equipment, and Zenith Radio Corporation manufactures the new eight-inch Rauland tube.

The tube also permits the radiologist to work much faster because the enlarged cov-

erage reduces the necessity for repeated shifting of the apparatus as is required with the conventional tube.

The Picker assembly has a 16-millimeter camera mounted on top of the image tube. This is directly synchronized with the X-ray tube so that the tube is energized only when the camera shutter is open. As a result, the patient receives sharply reduced amounts of radiation exposure during a continuing examination.

Image amplification fluoroscopy in X-ray work differs from radiography, X-ray photography, in that the radiologist sees a continuous, functioning view of an organ and need not wait for a still picture to be developed.

Many operations that have been limited mainly to children in the past because of the restrictions of the five-inch tube will now be possible on adult patients, the manufacturers said.

Science News Letter, October 4, 1958

AERONAUTICS

Women Making Inroads In World of Aviation

► WOMEN ARE beginning to scratch the surface of one of the world's few remaining male strongholds, aviation.

There are 18,067 female pilots in American aviation, contrasted with 791,282 male pilots, the Civil Aeronautics Administration has revealed. That still is a ratio of about 40 to 1 in favor of the men.

The total number of pilots of both sexes increased dramatically in 1957, the latest reporting year. The 1957 total of slightly more than 809,000 represents an increase of 43,000 pilots over the previous reporting year.

"This increase in certificated pilots is evidence of the vigorous growth of aviation in the United States," Civil Aeronautics Administrator James T. Pyle said in making the figures public.

Science News Letter, October 4, 1958

OPTICAL BARGAINS

See the Stars, Moon, Planets Close Up!

3" REFLECTING TELESCOPE

60 to 160 Power — An Unusual Buy!



Famous Mt. Palomar Type
Assembled—ready to use! You'll see the Ring of Saturn, the fascinating planet Mars, huge craters on the Moon, Star Clusters, Moons of Jupiter in detail. Galaxies! Aluminized and overcoated 3" diameter high-speed f/10 mirror. Equatorial mount with lock on both axes. An Optical Finder Telescope, always so essential, is also included. Low cost accessory eyepiece available for power up to 320. Sturdy, hardwood, portable tripod. Free with scope—valuable star chart and 272 page "Astronomy Book." Order by Stock No. Send check or M.O.—Money-back guarantee!
Stock No. 85-050-Q.....\$29.95 Postpaid

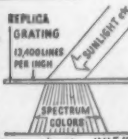
4 1/4" ASTRONOMICAL TELESCOPE up to 270X!



Mt. Palomar type. Up to 270 Power. A fine Reflector Telescope complete with real Equatorial Mount and Tripod and 6X Finder. Aluminum tube, 4 1/4" dia. mirror, rack and pinion focusing eye-piece holder, 2 eyepieces and mounted Barlow Lens for 40X, 80X, 120X and 270X. Low cost accessory eyepiece available for power up to 540. Shipping wt. approx. 25 lbs.
Stock No. 85-008-Q, complete, \$74.50 f.o.b. Barrington, N. J.

REPLICA GRATING Low, Low Cost

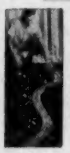
It's here—after decades of effort. Replica Grating—on film—at very low price. Breaks up white light into full spectrum colors. An exciting display. 13,400 lines per inch, running long way on film 8" wide—grating area 7 1/2". Thickness about .005". Dispersion about 24°. Use it for making spectroscopes for experiments, as a fascinating novelty. First time available such large size—so cheaply. Comes in clear plastic protector.
Stock No. 40-287-Q place 8"x11".....\$1.50 pstpd.
Stock No. 60-180-Q place 8"x8".....\$5.95 pstpd.



LOW COST SCIENCE TEACHING AIDS



HAND STROBOSCOPE—Held in hand—rotated with finger. View through slits—motion of fan blades, other fast moving objects apparently stopped. Flexible black plastic disc, 8" dia.—6 slits, friction mounted to prevent breakage—sturdy wooden handle. Priced so you can provide full student participation.
Stock No. 90-001-Q.....\$9.00
Plus postage & packing......85
Total.....\$9.85



COILED SPRING-WAVE DEMONSTRATOR
Triple length model of the popular "walk down the step" type toy, found to be excellent for demonstrating wave motion, observing pulses, understanding superposition and cancellation, etc. 8" dia., 6" long when compressed—expands out to approx. 50 ft.
Stock No. 90-002-Q.....\$2.00
Plus postage & packing 80¢.....
Total.....\$2.80



TWO-STAGE ROCKET TOY—Simple, safe—demonstrates principles of jet rockets. Uses water and air as fuel. First stage soars up 200 to 300 ft.—then 2nd stage is automatically released, going still higher. A 2nd stage satellite is also included and may be substituted. Made of Butyrac plastic. Set includes fuel supply tank and air injection pump.
Stock No. 70-157-Q.....\$2.98 pstpd.

RIFFLE TANK—Now available... as well as other teaching aids. If interested, write to have name included on our mailing list for BULLETINS No. 80Q.

FREE CATALOG-Q

Yours for the Asking

America's No. 1 source of supply for experimenters, hobbyists. Complete line of Astronomical Telescope parts and assembled Telescopes. Also huge selection of lenses, prisms, war surplus optical instruments, parts and accessories. Telescopes, microscopes, satellite scopes, binoculars, infrared superscopes, items for making "Science Fair" projects, etc. Request Catalog-Q.

Order by Stock No.—Send Check Satisfaction Guaranteed

EDMUND SCIENTIFIC CO.
BARRINGTON, NEW JERSEY



PHYSICS

Lithium-Six Is Lightest Metal Known to Exist

► THE LIGHTEST metal known to man, lithium-6, is also probably the lightest metal that can exist in the universe.

Dr. Donald Montgomery, Michigan State University physics professor, has deduced this from experiments measuring the spaces between atoms in lithium-6 compared to lithium-7. Since the atomic spacing is greater in lithium-6 than in lithium-7, the former must always be lighter than the latter.

"Even if atoms of hydrogen, the lightest element, were compressed so tightly they formed a metal, the pressure would be so great that it would be heavier, by volume, than lithium," Dr. Montgomery said.

His tests also support the idea that even at absolute zero, 459.7 degrees below zero Fahrenheit, there is still some atomic motion. Previous theory holds that all atomic motion ceases at absolute zero.

In other experiments, Dr. Montgomery has studied the absorption of infrared waves by compounds containing lithium-6 and lithium-7. He believes this work shows the current theory on absorption of light by solids is inadequate.

Since guided missiles can be guided to a target by infrared waves, the invisible radiation given off by hot objects, it is possible his findings might help in locating new materials through which the waves would pass into an infrared-sensitive device in a missile.

Dr. Montgomery's work is supported by grants from the Atomic Energy Commission, the U. S. Army Office of Ordnance Research, and the Michigan State All-University Research fund.

Science News Letter, October 4, 1958

CONSERVATION

Forest Fire Danger Rises, More Blazes in 1958

► LIGHTNING and dry weather mean fire and this year the incidence of forest fires has soared.

In national forests the number of fires reported so far this year totals 8,232 compared with only 5,652 for the same period in 1957. With the fall fire season yet to come, the U. S. Forest Service warns, the number of fires and the acreage destroyed through burning can be expected to continue increasing. The danger of man-made fires, still the most important cause of forest fires, increases as hunters, picnickers and fall foliage sightseers take to the woods.

So far this year, however, lightning has been one of the major causes. In California lightning accounted for some 600 fires in just two weeks in July. Montana, with 68 lightning-caused fires in one day, had to borrow smoke jumpers from nearby states to fight the flames.

Another danger that can come from the skies seems to be jet airplanes, the Forest Service reports. Several small fires resulted where a jet crashed in a wooded area.

While the number of fires has been in-

creasing, the acreage burned has declined over last year. Only about half as many acres, 38,062, have been lost so far this year compared with 72,737 acres in 1957.

Improved detecting methods and better equipment account for the fact that fires are being suppressed before they get out of hand. Aerial spraying of fire retardants is being used. Fire fighters are also taking to the air to get where they are needed. Recently helicopters have been used both to get equipment to the scene and to transport men. Forest experts agree that a good share of the credit for keeping down the acreage burned should go to the airborne fire fighter.

Science News Letter, October 4, 1958

SCIENCE NEWS LETTER

VOL. 74 OCTOBER 4, 1958 NO. 14

Edited by WATSON DAVIS

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N. St., N.W., Washington 6, D. C., NORTH 7-2255. Cable Address: SCIENTSERV.

Subscription rates: 1 yr., \$5.50; 2 yrs., \$10.00; 3 yrs., \$14.50; ten or more copies in one package to one address, 7 1/2 cents per copy per week; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

Copyright © 1958 by Science Service, Inc. Reproduction of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicated services issued by Science Service. Science Service also publishes CHEMISTRY (eight times a year) and THINGS of Science (monthly).

Printed in U.S.A. Entered as second class matter at the post office at Washington, D.C., under the act of March 3, 1897. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40 P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283) authorized February 28, 1950. Established in mimeograph form March 13, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Reader's Guide to Periodical Literature, Abridged Guide, and the Engineering Index. Member Audit Bureau of Circulation.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: William W. Rubey, U. S. Geological Survey; Wallace R. Brode, National Bureau of Standards; Douglas Whitaker, Rockefeller Institute for Medical Research. Nominated by the National Academy of Sciences: Edward U. Condon, Washington University; Harlow Shapley, Harvard College Observatory; Philip Bard, Johns Hopkins University. Nominated by the National Research Council: I. I. Rabi, Columbia University; Leonard Carmichael, Smithsonian Institution; John R. Dunning, Columbia University. Nominated by the Journalistic Profession: O. W. Riegel, Washington and Lee University; Michael A. Gorman, Flint Journal; Leo Hills, Detroit Free Press. Nominated by the Scripps Estate: Edward J. Mamon, Memphis Press-Scimitar; Frank Ford, Washington, D. C.; Charles E. Scripps, Cincinnati, Ohio.

Officers — President: Leonard Carmichael; Vice President and Chairman of Executive Committee: Charles E. Scripps; Treasurer: Wallace R. Brode; Secretary: Watson Davis.

Staff — Director: Watson Davis. News Editor: Ralph Segman. Writers: Helen Buechl, Ann Ewing, Jane Marye, Benita Tall, Marjorie Van de Water, Howard Simons (on Nieman Fellowship leave). Science Youth Division: Harold A. Edgerton, Joseph T. Kraus, Dorothy Schriver, Shirley Moore. Photography: Fremont Davis. Production: Priscilla Howe, Marcia Nelson. Syndicate Sales: Hallie Jenkins. Interlingua Division in New York: Alexander Gode, 80 E. 11th St., Greenwich 3-5410. Advertising Manager: Fred A. Moulton, Metropolitan 8-2562.

ORNITHOLOGY

Weather Affects Migrants

Successive days of cold temperatures appear to be the "trigger" that sends waterfowl on their long southward migration in the fall.

► A RECENT spectacular migration of waterfowl down through the central part of North America may give some answers to the puzzle of migration. It was a once-in-a-lifetime opportunity to gather the facts on and analyze a truly great movement of birds. Fortunately a large number of observers were on hand when more than one million birds poured down along the Mississippi Flyway in three days.

The Mississippi Flyway is one of several paths taken by migrating birds. As its name indicates, the birds follow the course of the Mississippi River and its tributaries. On Oct. 31, Nov. 1 and 2, 1955, a mass movement of waterfowl began from the Great Plains of Canada. Refuges along the route were filled to three times their normal seasonal quota of southbound birds; some even had 12 times as many. For the first time in their lives, some men looked skyward and saw the blue darkened by thousands of swiftly flying birds. Naturalists observing the migration from airplanes were literally enveloped in their work. Hunters had a "field day" as some flocks passed only a hundred feet overhead.

Before Oct. 31, there had been only a small, steady trickle of ducks and geese down into the Mississippi Flyway, observers report. Something happened on that last day in October to change the trickle to a flood.

What happened was a change in the weather.

Several aspects of the weather, such as wind direction, snow or rain, barometric pressure ("highs" and "lows"), and temperature, apparently influenced ducks and geese in their fall migration. It seems, however, from comparisons of weather data for the three-day spectacle that temperature is the important determinant.

Low pressure areas in Canada resulted in a southward flow of a mass of continental Arctic air. The low temperatures resulting triggered the flight from the Canadian and United States' great plains.

Interestingly enough, Frank C. Bellrose of the Illinois Natural History Survey Division points out in a report of the migration that the flight moved faster than the cold air mass. The birds preceded the Arctic air at Winnipeg, Canada, and Peoria, Ill. In between these places, at Minneapolis and at Memphis, the cold front speeded up and arrived with the birds.

(Persons interested in weather prediction might consider these findings as sufficient reason for taking the winter woollens out of storage whenever a large number of migrating birds is seen overhead in the fall of the year.

While a small amount of snow had fallen before the great migration began, naturalists

do not believe it was deep enough to affect seriously the birds' feeding on waste grain in harvested fields. Winds also varied so that their influence in initiating the flight was probably negligible. The migrating flocks seldom had a tail wind to help; the winds, including those at about 2,000 feet and near ground level, were only partially favorable for southward migration. Altogether wind conditions, turbulent air, snow showers, and low, dense and extensive clouds, made for hazardous flight and difficult navigation.

Successive days of cold appear to have been enough to put the birds to flight even if other conditions were unfavorable.

Many thousands of ducks made the long flight in two days. Trip length varied between 1,400 and 2,000 miles depending on which of the waterfowl marshes in Canada the birds had left. At an average speed of 40 miles an hour, it seems likely that some birds made the long migratory flight without stopping.

No one factor seems to encompass all the influences on migration. Better food, warmer climate, more shelter, a drive toward one special place where breeding takes



FLYING VEHICLE—C. C. Utz, executive engineer for the defense engineering group at Chrysler Corporation, holds a model of the wingless flying machine developed for the U. S. Army Transportation Corps. Twin rotors are set within barrel-like ducts to provide lift and thrust. One man controls the entire flight by means of simplified controls and preliminary test model data have proved the "soundness" of the concept," Mr. Utz said.

place and continuation of the species is assured, all are influences on some migratory animal or bird.

It seems likely that when the puzzle of migration is solved there will be not one solution but many.

Science News Letter, October 4, 1958

ORNITHOLOGY

Diving Ducks Hurt By Dry Weather

► DIVING DUCKS, the canvasback and redhead among them, have been hit hard by three years of drought.

As a result, the U. S. Fish and Wildlife Service reports, hunters are being restricted in the number of these ducks they can take. Even so, the wildlife experts have expressed serious concern over the diving ducks' survival.

In some areas of the United States and southern Canada where the migratory waterfowl nest and are raised, the number of ponds is now less than half what it was in 1955. Canvasback and redhead ducks, which build their nests in marshes with the nest just inches above the water, were particularly hard hit by the drought.

The 1958 winter waterfowl survey found one-third as many canvasbacks along the Atlantic and Mississippi flyways (routes taken by the migrating birds) as in 1954. With almost half the canvasback population taken each fall hunting season, the species' survival is precarious.

Science News Letter, October 4, 1958

METEOROLOGY

Tornado Occurrence Charted for U. S.

► EIGHTY-NINE PERCENT of the tornadoes in the United States occur between Feb. 1 and Aug. 31. Some 68% occur during the four months between April 1 and July 31. Most twisters strike between noon and midnight.

These figures on tornadoes were compiled by J. T. Lee of the U. S. Weather Bureau's Severe Local Storms Center, Kansas City, Mo., from a study of the 3,204 twisters recorded in the United States during the period 1950 to 1956.

He found an average of 458 tornadoes occurred each year from 1950 to 1956, compared to 149 per year for the period 1916 to 1950. This increase in the number of tornadoes in recent years is attributed to better reporting, not to an actual increase in the number of storms.

Only those tornadoes with funnels touching the ground were included in Mr. Lee's study. Funnel clouds aloft were not included because of the more likely chance of mistaken identity.

Science News Letter, October 4, 1958

Allergies are not inherited but the tendency to develop one can be.

Although the continental shelves extend out from land for distances ranging from a few to many hundreds of miles, the depth of water over them is generally less than 600 feet.

MEDICINE

Study Placenta Leak

► **THE THEORY** that babies can bleed extensively while still within the womb is supported by a clinical report from four investigators.

Fetal cells were found in the circulation of a pregnant woman, suggesting a leak in the placenta, Dr. W. Weiner, director, Regional Blood Transfusion Service, Birmingham, England, reports in the *British Medical Journal* (Sept. 27).

Previously, fetal cells had been discovered in the female circulatory system after the birth of the baby. These cells might have entered the maternal circulation during delivery, however.

The woman referred to in the reported case was known to have blood group A, rhesus negative. She had had one abortion at three months and her first baby was stillborn.

A blood test taken near the end of her next pregnancy revealed results that were contradictory to her known blood group, that is, not only did she exhibit Rh negative but also Rh positive reactions.

A cesarean section was performed and

exchange transfusions were begun on the baby as soon as possible. The baby died approximately 15 hours after birth, however, the investigators said.

The hemoglobin level of the baby was very low, 5.1 grams per 100 milliliters. The authors suggest that the baby must have bled extensively because the extremely low hemoglobin level would not likely be produced by hemolysis, the liberation of hemoglobin, alone.

The production of anemia in babies through blood loss into the maternal circulation has been suggested by previous researchers. Although hemolysis undoubtedly played a role in the cause of anemia in this case, the authors indicate that this is a further example of severe bleeding of the fetus.

Assisting Dr. Weiner were Rosalie M. Child of the department of pathology, J. M. Garvie, consulting pediatrician, and W. H. Peck, consulting obstetrician and gynecologist, all of Manor Hospital, Walsall.

Science News Letter, October 4, 1958

65%; toxemia, 43%; hemorrhage, 24%, and heart disease, 21%.

Infection showed the greatest reduction as a cause of maternal death.

"Were it not for the large number of deaths due to criminal abortion, which often does not respond to the antibiotics, infection would be eliminated as a leading cause of maternal death," Drs. Klein and Clahr say.

The most frequent cause of maternal deaths was hemorrhage. The decrease in deaths was primarily due to the more liberal use of blood transfusions.

New blood pressure-lowering drugs and diuretics that help the body rid itself of fluids help control toxemia. Developments in anesthesia and the increasing number of qualified persons to administer it have made anesthesia safer.

Also, education of the public concerning the importance of early prenatal care and good medical care, improved hospital facilities, and more rigid hospital rules and regulations have affected the death rate.

Science News Letter, October 4, 1958

● RADIO

Saturday, Oct. 11, 1958, 1:35-1:45 p.m., EDT
"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio network. Check your local CBS station.

Dr. Arnold Bass, assistant chief of the Free Radical Research Section, National Bureau of Standards, in Washington, will discuss "Frozen Fragments of Molecules."

MEDICINE

Leukemia Deaths Up

► **RADIOACTIVE** fallout and other possible cancer-causing factors apparently cannot be blamed for the increase in leukemia, or blood cancer, in the United States.

In fact, two public health experts report, there is no support for a theory that leukemia-causing factors in the American environment have increased sharply within the last 15 years.

Taking into consideration both age and racial differences, Drs. Alexander G. Gilliam and William A. Walter, epidemiologists with the National Cancer Institute, report an increase in the death rate from leukemia for all ages. Since 1940, however, there has been a decline in the rate of increase among white persons. Between 1930 and 1940 the increase in the death rate for this disease was 64% for the whole population. Between 1940 and 1950 it had declined to 43%, the scientists report.

They believe that if exposure to environmental factors is actually responsible for the disease there is evidence that such exposure has either become stabilized or has decreased during the past 15 years.

In contrast to the national picture, some areas, including states in New England, the east and west South Central regions, the South Atlantic and the Mountain regions, show a speed-up in the leukemia mortality rate increase. Contrary to some earlier reports, Drs. Gilliam and Walter doubt an association between geographic factors and leukemia. They believe the number of cases reported are too small and that the geographic areas are too widely separated to consider a relationship probable. There is "no reason to single these states out for

particular consideration," Drs. Gilliam and Walter report.

Further details of their study, which appears in *Public Health Reports* (Sept.), indicate an increase since 1940 in death rates for white children three and four years old. This increase tends to offset a regular decline in the leukemia mortality for white infants under one year of age.

Science News Letter, October 4, 1958

MEDICINE

Maternal Death Rate Cut In Half in Past 11 Years

► **ONLY HALF** as many women are dying in childbirth as their counterparts of just 11 years ago.

This greater maternal survival rate has come about because the past few years have been a period of "phenomenal growth and accomplishments unmatched in the history of obstetrics," Drs. Milton D. Klein and Jacob Clahr, members of the Bronx County Medical Society's committee for maternal welfare, report in *The Journal of the American Medical Association* (Sept. 20).

According to the U.S. National Office of Vital Statistics, the number of maternal deaths for the nation per 10,000 live births has decreased from 11.6 in 1946 to four in 1956.

As for the cause of death, the percentages of decrease in maternal mortality in Bronx County between the first and second halves of the 11-year study based on 254,249 live births were: infection, 80%; anesthesia,

EMBRYOLOGY

Test Tube "Mothers" Two Baby Mice

► **TWO BABY** mice, which had been conceived normally and had had a test tube for a mother for two days, have been born at the Royal Veterinary College, London.

The surviving mice were among several mouse embryos used in an experiment to study the effects of interference during embryo development.

The embryos were obtained from mice when they were at the 8- to 16-cell stage, about two and one-half days after conception. They were then placed in a test-tube culture medium, Anne McLaren and J. D. Biggers of the veterinary college report in *Nature* (Sept. 27).

After two days, they were transplanted to a different, pregnant animal. Since only the transplanted embryos were albinos they could be identified after transplant by eye color when they reached the stage of cell differentiation.

The control experiment consisted of transplanting embryos without the intermediate test-tube step. A comparison of the two types of transplant and the effect of the test-tube step revealed that the difference in weight and rate of development between the two types of embryos was insignificant, the scientists note.

The two baby mice were, at the time the report was written, four weeks old and apparently unaffected by their unusual development.

Science News Letter, October 4, 1958

MEDICINE

Study Medical Hypnosis

► HYPNOSIS and its effects and limitations should be taught in medical and dental schools under the auspices of reliable medical authorities, a psychiatrist warns.

His statement followed closely on the heels of the American Medical Association's recent endorsement of hypnosis as a practical medical tool. The psychiatrist, Dr. Zigmund M. Lebensohn of Washington, D. C., was an early member of the AMA's council on mental health, the committee that reported the results of a two-year study on the usefulness of hypnosis in medical fields. The council also condemned the use of hypnosis for entertainment purposes.

Dentists were found to use hypnosis more than physicians, mainly to reduce the pain and anxiety associated with tooth extraction, Dr. Lebensohn told SCIENCE SERVICE. But danger lies in the temptation of the dentist to explore the psychiatric life of the patient, a field outside of the dentist's competence, he said.

It is not unusual for doctors and dentists to take a quick course in hypnosis from a traveling teacher who breezes into town and sets up shop in a hotel room, he pointed out. Since the art of hypnotizing is relatively simple, the student is usually satisfied with his new-found powers. Courses have been offered to doctors and dentists on the basis of a five- or ten-lesson correspondence course. But if hypnosis were taught in legitimate schools, it would become less dramatic and its fascination would die down, the psychiatrist said.

Therefore, in agreement with the reporting council, Dr. Lebensohn stressed that all those who use hypnosis need to be aware

of the complex nature of the phenomena involved. Teaching related to hypnosis, he said, should be under responsible medical or dental direction and integrated teaching programs should include not only the techniques of induction but also the indications and limitations for its use within the specific area involved.

The American Dental Association reported, in response to an inquiry, that while it did not endorse the use of hypnosis, many dentists were receiving instructions at post-graduate or "brush-up" levels.

In 1955, the *Journal of the American Medical Association* carried reports on the favorable use of hypnosis in pregnancy and labor; in 1957, for a Cesarean section and hysterectomy; and as recently as this past June, a report on the successful use of hypnosis during heart surgery was presented at the annual meeting of the AMA in San Francisco.

Science News Letter, October 4, 1958

CONSERVATION

Science Changes Conservation Picture

► "WE ARE approaching the point where all our wheat product will be needed for our own uses, and we shall cease to be an exporter of grain."

This prediction, which today seems to be wishful thinking, was made just 50 years ago when many eminent scientists, engineers and Government officials saw only shortages and scarcity facing the nation. J. J. Hill's statement, one of several equally gloomy

predictions made by the well-known railroad man and others, led to a conservation movement based on fear.

Today, Dr. Thomas B. Nolan, director of the U.S. Geological Survey, reports, the movement is based on "wise use of presently used resources."

Science and technology have changed the conservation movement, Dr. Nolan points out in *Science* (Sept. 19), by creating new materials faster than consumers can exhaust present resources.

Even our nonrenewable resources, minerals and fuels, present an optimistic picture. Better techniques make possible more efficient and economic development of these resources. We have found unknown and unsuspected supplies of petroleum and important minerals, Dr. Nolan says. He also points to "our research-derived capacity to produce synthetic fuels" and to our ability to "invent or produce out of abundant materials, new substances that have predictable, specific desired properties."

The geologist is also optimistic about the nation's water resources. Dr. Nolan explains that we are now solving water problems by regulation and using our knowledge of the water cycle. Current studies in water evaporation control, underground water and in salt water conversion promise to increase the amount of available water.

"We probably need to fear, not the exhaustion of physical resources, but the dangers of inadequate or belated utilization of our intellectual resources," he says. "I hope we are currently rediscovering the need to practice this kind of conservation."

Science News Letter, October 4, 1958

PHYSIOLOGY

Canines Studied for Air Pollution Effects

► SMOG CONDITIONS in Los Angeles County do not worry the local dogs.

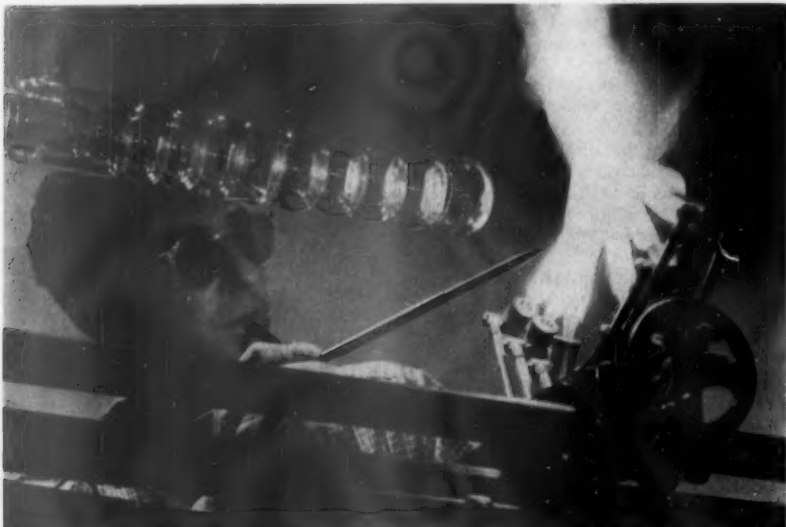
A study of some dogs raised in the smog area of Los Angeles County revealed that none of them suffered the expected respiratory tract illnesses.

Fifty-one canines were examined to compare their respiratory tract changes with dogs that had changes induced by exposure to a synthetic smog in inhalation chambers, Dr. Earl J. Catcott, of the California State Department of Public Health, and Drs. Charles J. McCammon and Paul Kotin, of the University of Southern California School of Medicine, report in the *Journal of the American Veterinary Medical Association* (Sept. 15).

The dogs studied had been exposed to natural air pollution as it occurs in the Los Angeles area for periods varying from four months to 18 years.

Unpublished studies by Drs. Kotin and McCammon have demonstrated that dogs exposed to smog in inhalation chambers experience a definite morphological change. The synthetic smog consisted of gasoline vapor plus ozone and ultraviolet light, the scientists say. The changes found in the dogs were not found in those dogs that had been exposed to naturally occurring smog during their lifetime.

Science News Letter, October 4, 1958



GLASS WORKER—An ancient art, glass blowing, is combined with modern technical skills to produce complicated scientific glassware. Earl Sexton, employed at the Indiana University chemistry department, works at a glass-turning lathe equipped with a multi-jet gas flame.

PHYSIOLOGY

Chemical in Urine Shows Radiation Effects

► A WARNING signal that could be used to indicate whether the body has been damaged by radiation is reported by a team of Czechoslovakian researchers.

Studies with rats showed irradiation causes an increased excretion of a substance which is related to deoxyribonucleic acid, or DNA, an essential compound found in the living cell.

Other stresses such as physical restraint or bone fractures do not produce the same results, the scientists report in *Nature* (Sept. 13). The scientists say that within a certain dose-range the amount of deoxycytidine, a compound containing deoxyribose, excreted during the first 24 hours after irradiation depends on the irradiation dose used.

Excretion of deoxycytidine can thus become a new sensitive indicator of post-irradiation changes, they conclude. It may also be useful in evaluating methods of protection against ionizing radiation. "Damage can be detected earlier and much more simply than with the diagnostic methods in use at the present," the scientists point out. The presence of the deoxycytidine could be detected even after low irradiation doses.

The scientists believe irradiation causes either increased release of deoxycytidine from DNA or that it accumulates because the synthesis of DNA is stopped.

J. Parizek, M. Arient, Z. Dienstbier and J. Skoda, all of Prague, reported on results of their research.

Science News Letter, October 4, 1958

CONSERVATION

Virgin Prairie Land Set Aside for Research, Study

► UNBROKEN PRAIRIE lands took on a new importance in the jet age as scientists and conservationists gathered to dedicate 160 acres of land that has never been cut by the plow.

The Tucker Prairie Research Station near Columbia, Mo., has been established to preserve one of the few remaining tracts of natural prairie land in the United States. Here, Dr. Alan T. Waterman, director of the National Science Foundation, pointed out, scientists will be able to observe the essential role environment plays in the study of biology.

The study of living things in their natural environment rather than in the laboratory is attracting more and more scientific interest. However, natural environment is becoming rare in the face of the steady and uncontrolled growth of urbanization and mechanization, Dr. Waterman said.

It is now obvious, he explained, that the "survival of natural environments cannot be left to chance but must be the subject of organized effort, supported, where necessary, by local and Federal Government."

Commending the University of Missouri for its activities in preserving the Tucker prairie, Dr. Waterman also described the

crucial role universities play in preserving natural resources. They participate in three ways: establish fundamental principles through basic research; encourage and train biologists to become ecologists; and support and influence local and national policies that will "insure effective land utilization and preserve irreplaceable natural resources."

The research station will be a joint state-University activity, where soil, animal and plant studies of a typical wet-grass prairie area can be studied.

The National Science Foundation contributed \$19,000 toward the purchase of the tract of land. Conservation groups and private individuals interested in the preservation of a piece of untouched prairie land also contributed.

Science News Letter, October 4, 1958

PUBLIC HEALTH

94 Paralytics Received Salk Vaccine Series

► APPROXIMATELY 94 cases of paralytic polio have been reported since January in persons who had received the entire series of anti-polio shots.

The fact that the polio vaccine did not protect these people from the crippling virus could be attributed to several causes.

First, the shots may not have been received in proper sequence, Dr. C. C. Dauer, medical adviser of the National Office of Vital Statistics, said. The first two shots must be taken one month apart while the final shot must be taken not before seven months have elapsed after the second shot.

Secondly, the vaccine itself is not guaranteed to be 100% effective. The percentage of satisfactory immunization ranges somewhere between 70% and 90%.

The third cause for failure of the vaccine to protect is the recognized fact that if a year has elapsed since the administration of the polio shots, the effectiveness may diminish. Exposure to a severe epidemic of the virus can then overcome the vaccine's potency.

During polio outbreaks, people tend to rush for their polio shots, thinking that the vaccine will quickly ward off any chance of contracting the disease. Unfortunately, this last minute dash will not give adequate protection, public health experts warn. The shots must be staggered over the proper time period before they can become effective.

Only 2,220 cases of paralytic, non-paralytic and unspecified poliomyelitis were reported for the whole population of the country in the 35 weeks ending Aug. 30. The total last year at this time was 3,879. The marked decline in the frequency of cases in the last two years may be attributed in large measure to the widespread use of the Salk vaccine.

Despite this encouraging news, the fact remains that 44,000,000 persons under the age of 40 still lack proper protection. Currently scientists are working on the development of a more potent vaccine that may give lasting immunity. The duration of protection offered by the Salk vaccine is still unknown.

Science News Letter, October 4, 1958

IN SCIENCE

GEOPHYSICS

Lowest Temperature Recorded by Soviets

► THE WORLD's lowest temperature, 124.1 degrees below zero Fahrenheit, was recorded on Aug. 9, 1958, by Russians at Sovietskaya, their Antarctic base.

This low temperature record from the world's "icebox" is within approximately six degrees of the coldest scientists calculate the earth might ever reach, or minus 130 degrees Fahrenheit. Edwin Flowers of the U. S. Weather Bureau told SCIENCE SERVICE of the new world's record low temperature.

The extreme altitude of Sovietskaya, some 12,000 feet, probably accounts for the very low temperature recorded there. Russian stations high inland in Antarctica have consistently been setting record lows during 1958, the first year of their operation.

For instance, in June, the beginning of the Antarctic winter, three successive records were set. At Vostok, about 11,500 feet above sea level, the thermometer hit minus 113.3 degrees Fahrenheit on June 15. Only four days later the mercury fell to minus 113.8 degrees at Sovietskaya, and on June 25 it plunged to minus 117.4 degrees at the same station.

Science News Letter, October 4, 1958

PUBLIC HEALTH

Radioactivity in Milk Is Within Permissible Levels

► LATEST TESTS for the presence of radioactivity in milk show that the amounts of strontium-90 fall "well within the permissible levels recommended by the National Committee on Radiation Protection and Measurement."

Amounts of other radioisotopes, including cesium-137, iodine-131, barium-140 and strontium-89, also were under the limits set as safe over a lifetime, the U.S. Public Health Service has announced. The tests include results from four new stations in Georgia, Texas, North Dakota and Illinois. They represent milk samples collected through May, June and July.

Although dose levels established by the radiation committee are for water, Public Health officials point out that they are generally accepted as being applicable to milk.

Levels of strontium-90 in milk ranged from about three to ten micromicrocuries per liter in May to about three to 18 micromicrocuries in July. The permissible limit is 80 micromicrocuries per liter. A micromicrocurie is one-millionth of a millionth of a curie. A curie is equal to the radioactivity produced by about one-thirtieth of an ounce of radium.

Science News Letter, October 4, 1958

ICE FIELDS

MEDICINE

Report Tests of Oral Diabetic Drug

► **CHLORPROPAMIDE**, an oral drug for treating diabetics, has longer lasting effects and is twice as powerful as other agents now available.

The drug, called Diabinese by its developer, Chas. Pfizer & Co., Inc., is not yet available for general use, although it has been tested on more than 5,000 patients.

At the opening session in New York of the Conference on Chlorpropamide and Diabetes Mellitus, sponsored jointly by the New York Academy of Sciences and Pfizer, studies showing that Diabinese remains in the blood stream of a patient for 72 hours after a single dose were reported. The research by Drs. Philip Johnson, Allen Hennes and Kelly M. West of the University of Oklahoma also showed that the body does not appear to alter the drug chemically before excreting it.

The studies were made with a form of chlorpropamide tagged with radioactive sulfur-35.

Dr. West and Dr. Stanley R. McCampbell, also of the University of Oklahoma, compared the drug's effectiveness in lowering blood sugar levels with tolbutamide, at present the most widely used of the sulfonylurea pills. They found that two hours after the first dose, Diabinese produced lower blood sugar levels than did tolbutamide. Only half as much of the new drug was needed to produce the same lowering of blood sugar.

Diabetes is a metabolic disease known for some 3,500 years whose cause is still unknown.

Until 1922, when insulin was discovered, only dietary restrictions were available to help the diabetic. Since then, daily injections of insulin enable virtually all diabetics to lead normal lives. Oral insulin substitutes have been used to control the most common form of diabetes in some persons.

Science News Letter, October 4, 1958

ANTHROPOLOGY

Movies and Records Aid Anthropologist's Work

► **THE MOTION PICTURE** camera and the tape recorder are going into the jungles, deserts and other remote areas of the world to become the right hand of the anthropologist.

With photographs, motion picture film and tape recordings, the anthropologist has a permanent record of the activities of the primitive people he is studying. The existence of such records has meant that anthropology could take a giant step forward in solving some of its own "peculiar" problems, Dr. Margaret Mead, noted anthropologist, said.

It is now possible to begin microcultural

studies (the study of individuals and small groups within cultures) without the limitations of 25 years ago. Previously, observations of primitive peoples were mostly written and thus susceptible to all kinds of translation and interpretive difficulties. Only the observer's words and impressions of the group he was studying were available. Checks on reliability and validity of his observations were difficult or non-existent.

Dr. Mead explained to an audience gathered in Washington to hear the first talk in the new Washington Science Lecture Series that it is now possible to trace and compare observations of individuals. Cross-checking, comparing an individual's behavior at different times or comparing two persons' behavior under the same circumstances, has become more effective, imparting some objectivity to the science of anthropology.

Illustrating her lecture with slides of an Admiralty Islands society taken 25 years apart, Dr. Mead showed how the camera contributed to the scientist's research. With the anthropologist's study material being rapidly destroyed as surviving primitive peoples disappear, it has become even more necessary to make as objective studies of these peoples as possible.

Thus, Dr. Mead explained, we are beginning to see a change in anthropology as the methodology—the means for gathering facts and observations—assumes new importance. Anthropology began as a simple description of the activities and relations of peoples. Problems were raised because the science was dependent on human beings in their natural environment. The camera and recording machine have brought many observers to the scene and made repeated study of the material possible.

Science News Letter, October 4, 1958

PHARMACOLOGY

Chemical in Licorice Root Depresses ACTH Output

► **THE STUFF** that makes licorice root sweet may turn out to be a useful drug.

It acts very much like desoxycorticosterone, a chemical relative of the adrenal hormone cortisone, Dr. Shirley D. Kraus of the Brooklyn College of Pharmacy reports.

Experiments with mice subjected to the stresses of cold and hunger showed that when the animals were given the licorice root compound, glycyrrhizin, their resistance to stress was greatly reduced. Since cold and hunger are believed to increase the adrenal gland's activity through release of ACTH, Dr. Kraus points out that glycyrrhizin may depress the output of ACTH.

Desoxycorticosterone also depresses ACTH release. Earlier studies have shown the licorice substance can replace desoxycorticosterone in treating persons who have had their adrenal glands removed or persons afflicted with Addison's disease.

Dr. Kraus' research, reported in the *Journal of Experimental Medicine* (Sept. 1) published by the Rockefeller Institute, is further evidence of the similarities between the two substances.

Science News Letter, October 4, 1958

PHYSIOLOGY

X-Ray Shows Basic Step In Muscle Contraction

► **X-RAY PROOF** of the change that takes place in muscle protein when the muscle contracts was presented by a scientist.

Working with the fiber-like protein actomyosin, extracted from fish muscle, Dr. F. G. E. Pautard of The University of Leeds department of biomolecular structure reports that he obtained "X-ray indications of a transformation of a proportion of the protein into the supercontracted state."

This points to changes in the protein chain that makes up actomyosin.

The addition of ATP, an important energy-carrying compound found in all cells, to actomyosin when it was in a jelly-like form caused the muscle protein's shrinkage and contraction. The X-ray pattern of the ATP-treated actomyosin gel showed fundamental changes in the muscle protein.

Untreated gels could easily be stretched and had a characteristic X-ray pattern, the scientist reports in *Nature* (Sept. 20). ATP-treated gels were brittle and not easily handled. However, upon further treatment, specimens of the muscle protein showed changes in its X-ray pattern.

ATP is the name given to adenosine triphosphate.

Science News Letter, October 4, 1958

PUBLIC HEALTH

Find Possible Danger In "Safe" Water

► **DUCKS** have turned out to be unusually good in a deadly business: concentrating radioactive cesium.

Their muscles tissue can concentrate cesium-137 about 2,000 times over the level present in the water, Dr. Robert C. Pendleton and Wayne C. Hanson of General Electric reported to the Second United Nations International Conference on the Peaceful Uses of Atomic Energy meeting in Geneva.

The ducks are not alone in their exceptional concentrating powers, however. Algae concentrate cesium-137 1,200 times over the water's level, bullrush seeds concentrate it 70 times. As a result, the scientists reported, water perfectly safe to drink might still contain thousands of times too high a level of radioactive isotopes if the water is also a source of food.

By constructing an artificial pond in which they duplicated a natural pond environment, the scientists were able to study the effects of cesium-137 on living organisms in a typical aquatic community.

Within 50 hours after the radioactive cesium had been added to the water, 95% of it had been removed by the algae, plants and animals; 99% was removed in five days.

Dr. Pendleton said that results of the experiments show aquatic plants accumulate cesium-137 about 500 times as much as plants grown in soil. He also pointed out that carnivorous animals concentrate the radio-isotope to higher levels than animals that eat plants.

Science News Letter, October 4, 1958

BIOLOGY

Biology by the Sea

The Bermuda Biological Station, situated at a world famous vacationland, is providing scientists with answers to the mysteries of the sea.

By HOWARD SIMONS

► THE SAME CLEAR blue water that provides scenic beauty and recreation for countless thousands of visitors to Bermuda may also provide clues to some scientific mysteries.

Each summer, about two dozen men and women from the United States and a few other nations come to an old sea resort nestled on a small knoll, just opposite Kindley Field, the U. S. Air Force base in Bermuda. As other comers to the Island, they wear Bermuda shorts and go fishing, skin diving and boating. But, these are neither honeymooners nor vacationers. They are scientists. And their fishing, skin diving and boating is not for pleasure, but part of their research.

They come to Bermuda because it is a permanently anchored science station in the Atlantic Ocean, with the deep sea close at hand, an abundance of sea life, and some of the clearest ocean water in the world.

The old sea resort hotel is now the Bermuda Biological Station, a meeting and working place for scientists engaged in research to learn more about the world and its inhabitants. The Station is representative of many others like it in other countries throughout the world.

Unknown Oceans

The ocean, which covers two-thirds of the surface of the earth, is becoming more and more important to the land dweller. Yet, man knows less about the ocean than he knows about most other parts of his environment. Great amounts of money are being spent to explore upwards into outer space. Comparably, almost nothing is being spent to explore the depths.

Many scientists are convinced that if the world is going to be capable of feeding, clothing and sheltering an overpopulated community, it will have to turn to the sea to do it. As Dr. William H. Sutcliffe, Jr., director of the Bermuda Biological Station, put it, "If we stop to think about it, everything that is grown and eaten, and everything that is mined and made, eventually ends up in the sea. Somewhere along the line, we will have to get it back."

It is not surprising, therefore, that some of the studies at this island marine biology station are directly aimed at learning how man can best harvest the sea.

One study, for example, involves probing the Sargasso Sea, a 1,000,000 or so square mile eddy lying mostly to the southwest of the Island. It is one of the most impoverished areas in the world. The cause of its apparent near sterility is that it lacks nutri-

ents to sustain little more than a sparse population of tiny plants and animals called plankton. The sea, like the land, needs fertilizers, particularly nitrates and phosphates. Normally, these show up in the ocean from either runoff from land masses or from an upwelling of ocean water. The Sargasso Sea has neither source.

The Sargasso Sea is so barren of animal life that few large fish make their permanent home there. But the tiny animal populations and how they sustain themselves is highly important to researchers. Their sustenance is what interests Dr. David W. Menzel of the Bermuda Biological Station staff.

He is one of a team of researchers currently making a year-round study of the productivity of nutrients in the Sargasso Sea in collaboration with the Woods Hole Oceanographic Institute under a grant from the Atomic Energy Commission.

It is conceivable that the picture Dr. Menzel will be able to paint at his research's end will provide fishermen everywhere with a system for predicting commercial fish populations. Plankton depend on nutrients. Small fish depend on plankton. Large edible fish depend on small fish. By following the nutrients in the sea, one might be able to follow fish.

Other scientists from the United States, France and Sweden are studying underwater optics, how fish navigate and what the con-

stant chattering between underwater creatures means.

Not all the research involves the sea itself. Many of the studies at the Station depend on the sea for experimental animals. Work on what happens during the development of the cells in these animals, for example, can be applicable to what happens in human cells.

Other studies are aimed at trying to fit together some of the pieces of that giant jigsaw puzzle we call life. Dr. Ivan M. Goodbody of the University College of the West Indies, Mona, Jamaica, for example, is hoping to explain why a small sea animal known as the tunicate stores some of its waste, rather than passing it out of its body.

Dr. Sutcliffe himself is engaged in research, something he squeezes in between the constant demands made of him as the Station's chief administrative officer. He is studying the plankton in the Bermuda area to determine where the spiny lobster originates. This clawless delicacy is a commercial sea animal and important to the Island.

School for Biologists

The Station is also providing several medical students with an opportunity to perform research and, at the same time, study a tailored course in marine biology being taught by a group of working researchers. This project is being conducted in cooperation with New York University.

What the scientists find in their relatively short stay at the Station often takes months to analyze, interpret and record. Much of this is done back in the universities from which the researchers have come to Ber-



BERMUDA FOR SCIENTISTS—This one-time sea resort hotel is now serving science as the Bermuda Biological Station where researchers from throughout the world gather to skin dive, boat and fish—not for fun, but to unravel the mysteries of man and his environment. The Station's 60-foot research vessel, the *Panulirus*, is in the foreground.

muda. Almost all the scientists at the Station are also professors.

Their work is supported, in large measure, by grants from many sources—either their universities, the Station itself, or such Government agencies as the National Institutes of Health, National Science Foundation, the Atomic Energy Commission and the Office of Naval Research.

The Station, in turn, is supported by funds from an original endowment by the Rockefeller Foundation, grants, and by fees charged to the scientists who use its research boats, laboratories, equipment and housing facilities.

Historically, the Bermuda Biological Station for Research was established in 1903 through the joint efforts of the Bermuda Natural History Society, Harvard University and New York University. The present Station was officially opened in 1932. Although it had its ups and downs until after World War II, the Station today is considered one of the best of its kind in the Western Hemisphere.

Because of its location in the Atlantic Ocean, it offers scientists ready access to the study of problems in oceanography and biology. Collecting and field work can be maintained throughout the year.

Important, too, is the fact that life at the Station for both the permanent staff and the visiting scientists is a pleasant one. In many respects, it resembles a college campus in its friendliness and atmosphere.

The character of this marine biology station is perhaps best caught when the layman strolls around and eavesdrops, as this writer did. On his first visit, the first words he heard were, "Hey, Dave, your eggs have hatched!"

Science News Letter, October 4, 1958

ENGINEERING

Solar Furnace Features Front-Surface Mirror

See Front Cover

➤ A GIANT solar furnace, dedicated at the U. S. Army's Quartermaster Research & Engineering Command in Natick, Mass., on Sept. 30, can bring a sample of material at the image position to a temperature of 5,000 degrees Fahrenheit.

The photograph on the cover of this week's SCIENCE NEWS LETTER shows some of the 180 spherical mirrors, each two feet square, that make up the concentrator or heart of the furnace. All the mirrors are contained in a 30-square-foot frame.

Through the development of a special slumping technique, American Optical Company scientists were able to curve each mirror to a radius of 472 inches without grinding and polishing. The collector mirror is front-surfaced by vacuum deposited aluminized reflecting material with a protective silicon monoxide coating.

It is believed that the use of a front-surface mirror will be more efficient than the conventional back-surfaces due to less heat loss by absorption. Concentration of the sun's radiation results in an image approximately four inches in diameter focused within the test chamber.

Science News Letter, October 4, 1958

RAND McNALLY PUBLISHES

FIRST MAP of OUTER SPACE!



- Wall Size
- Living Space Color
- Real Color Photos

A quick, easy, intelligent way to understand the solar system and find answers to space age questions.

A professionally designed and illustrated map that allows exploration of outer space right in your own living room. After all, Rand McNally is America's oldest and best-known cartographer. This remarkable map, over one yard wide, covers billions of space miles accurately charting the planets, moons, asteroids and the MILKY WAY in full, realistic space color.

Special close up pictures show the rings of Saturn, the canals of Mars, a methane storm on Venus and Mercury's volcanic surface—all true-to-life in actual space colors.

THE BIGGEST MAP BARGAIN ANYWHERE! WALL SIZE, 42 X 33 INCHES!

Ideal for any home, a MUST for every school, government office, military agency, newspaper city room, library, and of great interest in any professional waiting room.

Not available in stores. Mailed to you, postage included, ready to frame, only \$1.95. Two for \$3.69. (For cash purchasers, send \$2 in bills, we will return 5 cents.)

ONLY \$1.95

DICK KENT, Trader

P.O. Box 264, Camp Hill, Penna.

"World Wide Scientific, Educational Specialties."

"Horror" Rubber Masks



"Come to Life" when worn. Thin latex rubber. Amazingly realistic. Eat, drink, smoke, talk with them on. Select favorite below. Face mask fits over head. Head mask fits over entire head down to collar. Money back guarantee. Order several.

Gorilla (Ape) Face Mask 88¢
Hairy Gorilla Head Mask \$1.95
Baboon Head Mask \$1.29
Neanderthal (Gave) Man Head Mask \$1.95
Frankenstein Horror Face Mask 90¢; Luminous Skull Face Mask 60¢; Bald Head Mask 85¢

Johnson Smith Co., Dept. 688, Detroit 7, Mich.
Catalog of 2950 Novelties, Tricks, Jokes 10¢

Study live
insects and whole
specimens!



with TESTA WIDE FIELD MICROSCOPE

Rugged, full-size American-made microscope features large working distance and 15x, 45x, and 75x magnification. Unusual versatility. Arm can be inclined in any direction of a 360° circle. Tube removable for field trips.

Keilner-type eyepiece. Triple divisible objective. Dual control coarse and fine focusing. Large reversible black and white stage. **\$54.85**

Write for full details!

TESTA MANUFACTURING CO.

Dept. SN-10 • 10122 East Rush Street, El Monte, Calif.

MICRO-ADS

Equipment, supplies and services of special interest to scientists, science teachers and students, science-minded laymen and hobbyists. 25¢ per word, payable in advance. Closing date 5 weeks prior to publication (Saturday).

SNL, 1719 N St., N.W., Washington 6, D. C.

PLASTICS

NEW LIQUID CASTING PLASTIC. CLEAR, colors. Embed real flowers, minerals, biological specimens, delicate instruments, electronic parts. Also cold setting resin and fiberglass for laminating, casting, molding, coating. Manual 25¢. Castolite Co., Dept. L-130, Woodstock, Illinois.

CHEMISTRY

32 BROCHURES AND 128 NOTE SHEETS on Chemistry and Allied Sciences. Descriptive literature Free upon request. "Lankton", Box 5126-S2, Lansing, Michigan.

MISCELLANEOUS

BINDERS FOR SALE—BUFF-COLORED Buckram Snap-in metal strips holds 52 copies. \$4.00 pp. Send orders with remittance to Science News Letter, 1719 N Street, N.W., Washington 6, D. C.

NOW—There's a New RELAXED WAY

TO LEARN ANY LANGUAGE



At Home—almost overnight

RELAX like a child

SPEAK like a native

Learn overnight

Find out the new Scientific

Shortcut. Send for FREE BOOK with details.

34 LANGUAGES by LINGUAPHONE

World's Standard Conversational Method

At Home—Abroad. For Business, Travel, Culture

LINGUAPHONE INSTITUTE

Dept. D-31-108 Radio City, N. Y. 20

In Canada: 901 Bleury St., Montreal

Send me FREE book on languages—no obligation.

Name

Address

City

Zone

State

Please check your language interest:

☐ Spanish (American) ☐ Spanish (European)

☐ French ☐ Italian ☐ German ☐ Russian

☐ Modern Greek ☐ Japanese ☐ Other

Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N. Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

ADOLESCENCE AND THE CONFLICT OF GENERATIONS: An Introduction to Some of the Psychoanalytic Contributions to the Understanding of Adolescence—Gerald H. J. Pearson—*Norton*, 186 p., \$3.95. Stresses the adult's behavior toward the adolescent, its cause and its effect.

AGGRESSION—John Paul Scott—*Univ. of Chicago Press*, 148 p., illus., \$3.75. Research findings show that there is no physiological evidence of spontaneous driving force for fighting; that all stimulation for aggression comes from forces in external environment.

ALBERT A. MICHELSON: America's First Nobel Prize Physicist—John H. Wilson, Jr.—*Messner*, 190 p., \$2.95. Biography for young people.

ALL ABOUT MONKEYS—Robert S. Lemmon—*Random House*, 144 p., illus. by Jean Zallinger, \$1.95. Introduces young reader to the monkey population of the tropics.

ALL ABOUT THE HUMAN BODY—Bernard Glemser—*Random House*, 136 p., illus. by Felix Traugott, \$1.95. Tells the child how the body functions.

ALL ABOUT SATELLITES AND SPACE SHIPS—David Dietz—*Random House*, 164 p., photographs, drawings by George Wilde, \$1.95. A child's introduction to space travel.

ANIMAL TRACKS AND HUNTER SIGNS—Ernest Thompson Seton—*Doubleday*, 160 p., illus. by author, \$3.75. Manuscript was completed by the wife of the late wildlife writer.

ATOMIC ENERGY FOR SMALL BUSINESS—N. Y. State Dept. of Commerce, 28 p., illus., free upon request direct to publisher, 112 State St., Albany 7, N. Y.

THE BACKGROUND OF ASTRONOMY—Henry C. King—*Braziller*, 254 p., \$5. For the general reader, a survey of the first 4,000 years of significant human observations of the sky.

THE BIBLE WAS MY TREASURE MAP—Paul Ilton—*Messner*, 255 p., illus., \$5. Personal story of an archaeologist who devoted his life to digging in the ruins of the Middle East.

THE CANADIAN OXFORD DESK ATLAS OF THE WORLD—E. G. Pleva, Adv. Ed., and Spencer Inch—*Oxford Univ. Press*, 137 p., maps, \$4.75. Small format, gazetteer with 5200 entries.

CHOLESTEROL—David Kritchevsky—*Wiley*, 291 p., \$9.75. Centralized source of pertinent material which has been dispersed in chemical and medical journals.

CONTRIBUTIONS TO THE THEORY OF NON-LINEAR OSCILLATIONS, Vol. IV—S. Lefschetz, Ed.—*Princeton Univ. Press*, 211 p., paper, \$3.75.

DICTIONARY OF PHYSICS—H. J. Gray, Ed.—*Longmans*, 544 p., illus., \$16.50. Compiled with contributions from a number of British scientists.

ELECTRONIC ENGINEER'S REFERENCE BOOK—L. E. C. Hughes, Ed., foreword by Percy Dunsheath—*Macmillan*, 1311 p., illus., \$18. Brings together for easy reference latest knowledge and techniques.

ELEMENTS OF GEOLOGY—James H. Zumberge—*Wiley*, 197 p., illus., \$5.50. Text for one-semester course in geology.

THE ENCYCLOPEDIA OF CHEMISTRY (Supplement)—George L. Clark, Gessner G. Hawley and William A. Hamor, Eds.—*Reinhold*, 330 p., illus., \$10. Contains over 200 concise articles, will be the only volume added to the original encyclopedia.

ENGLISH-RUSSIAN, RUSSIAN-ENGLISH ELECTRONICS DICTIONARY—Department of the Army—*McGraw*, 943 p., \$8. Translates about 22,000 Russian terms into English and 25,000 terms from English into Russian.

EXPLORING THE HIMALAYA—William O. Douglas—*Random House*, 177 p., illus. by Clarence Doore, \$1.95. Story deals with the peoples Justice Douglas met on his trips in 1950, 1951 and 1955.

HOW ABOUT THE WEATHER?—Robert Moore Fisher, foreword by Ernest J. Christie—*Harper*, rev. ed., 172 p., illus., \$3.75. Good introduction for the layman, brought up-to-date.

KINETIC THEORY OF GASES—R. D. Present—*McGraw*, 280 p., \$7.75. Introductory textbook for students of physics, as well as students of chemistry and of the engineering sciences.

LAND: The Yearbook of Agriculture 1958—Alfred Stefferud, Ed.—*Govt. Printing Office* for U. S. Dept. of Agriculture, 605 p., illus., \$2.25. Panoramic view of the Nation's natural resources.

LET'S GO TO A PLANETARIUM—Louis Wolfe—*Putnam*, 47 p., illus. by Beatrice Burke, \$1.95. Prepares the child for a visit to the planetarium.

LOUIS AGASSIZ: Pied Piper of Science—Aylea Forsee—*Viking*, 244 p., illus. by Winifred Lubell, \$4. For young people, it marks the hundredth anniversary of the Harvard Museum of Natural History which was founded by the naturalist.

MAN: His First Million Years—Ashley Montagu—*New Am. Lib.*, 192 p., illus., paper, 50¢. Reprint of 1957 hardcover edition published by World Pub. Co.

MARTY MANN'S NEW PRIMER ON ALCOHOLISM: How People Drink, How to Recognize Alcoholics, and What to Do About Them—*Rinehart*, rev. ed., 238 p., \$2.95. Information about the disease, its nature and its symptoms.

MATHEMATICS IN FUN AND IN EARNEST—Nathan Altshiller Court—*Dial Press*, 250 p., \$4.75. Collection of essays for the layman, including some famous problems.

METHOD IN SOCIAL ANTHROPOLOGY—A. R. Radcliffe-Brown, M. N. Srinivas, Ed.—*Univ. of Chicago Press*, 189 p., \$3.75. Selected essays.

OUT OF THE SHADOWS: The Story of Muscular Dystrophy—Elizabeth Ogg—*Public Affairs Committee*, Public Affairs Pamphlet No. 271, 28 p., illus., paper, 25¢.

PEACE OR ATOMIC WAR—Albert Schweitzer—*Holt*, 47 p., \$1.50. Appeal to the nations to stop the testing of atomic weapons.

PHOTOCHEMICAL SECONDARY REACTIONS IN URBAN AIR—Philip A. Leighton and William A. Perkins—*Air Pollution*, Report No. 24, 212 p., paper, \$6. Summarizes the important reactions such as those which occur in auto exhaust.

THE PHYSICIST'S CONCEPTION OF NATURE—Werner Heisenberg, trans. from the German by Arnold J. Pomerans—*Harcourt*, 192 p., \$3.75. The Nobel's essays on science and philosophy.

PHYSICS AND PHILOSOPHY—Sir James Jeans—*Univ. of Mich. Press*, 222 p., paper, \$1.75. A physicist's reflections on some of the problems of philosophy, first published in 1942.

REMEDIES AND RACKETS: The Truth About Patent Medicines Today—James Cook, introd. by Oliver Field—*Norton*, 252 p., \$3.75. Exposes the techniques used by drug promoters to sell the American public a billion dollars worth of patent medicines this year.

STATICS AND THE DYNAMICS OF A PARTICLE—William Duncan MacMillan—*Dover*, new ed., 430 p., illus., paper, \$2. Textbook on theoretical mechanics first published in 1927.

TECHNIC AND PRACTICE OF PSYCHOANALYSIS—Leon J. Saul—*Lippincott*, 244 p., \$8. Discussion of modern psychoanalytic method.

THERE'S ADVENTURE IN METEOROLOGY—Neil P. Ruzic—*Pop. Mechanics*, 166 p., illus. by Frank C. Murphy, \$2.95. Popular introduction to a career in meteorology.

THERE'S ADVENTURE IN ROCKETS—Julian May—*Pop. Mechanics*, 192 p., illus. by Frank C. Murphy, \$2.95. Introduces boys to a career in rocketry.

WAI-WAI: Through the Forests North of the Amazon—Nicholas Guppy—*Dutton*, 373 p., illus., \$5.95. Adventures penetrating the jungles of British Guiana, home of the White Indians.

Science News Letter, October 4, 1958

KINDERGARTEN Calvert School THRU 8TH GRADE
THE SCHOOL THAT COMES TO YOU
Accredited home-study courses for your child. Teaching manual guides mothers. Courses kept up to date by pretesting in Calvert's laboratory-school. Also used to enrich schooling of above-average child. Non-profit. 53rd year. Write for catalog.
920 Tuscany Rd., Baltimore 10, Md.

MAKE MONEY WRITING SHORT PARAGRAPHS



FREE! Send name—no money—for names and addresses of editors now buying from beginners, also descriptions of short paragraphs for which they pay \$2.00 to \$25.00 each.

YOU don't have to be a trained author to make money writing. Hundreds now getting checks every week for short paragraphs. I tell you what to write, where and how to sell. Easy coaching, no tedious study. Lots of small checks add up quickly. Send name for information and list. I'll mail everything right away—Free! **BENSON BARRETT**, Dept. 103-X 7464 N. Clark St., Chicago 25, Ill.

MODERN JUDO and Self-defence

by HARRY EWEN

Basic principles of judo expertly explained by use of split-second photographs. Instructions for every throw, lock and hold by an experienced successful coach. For the beginner as well as the experienced judoka. Particular attention paid to needs of those wishing to learn judo at home. "Clearly written instruction."—*Library Journal*.

Lavishly illustrated **ORDER NOW!**
\$3.95 Postfree • 10-Day Money-Back Guarantee
EMERSON BOOKS, Inc., Dept. 401-L
251 West 19th Street, New York 11

Best Book Contest for 1958

\$1600 Cash Awards plus 40% royalty. All types of manuscripts invited. For Contest rules and details of famous publishing plan, write for free Brochure 6N. Pageant Press, 101 Fifth Ave., N. Y. 3

Save Money On These Prized Exclusive Gifts!

Famous Wittnauer Empire BAROMETER and HUMI-THERM



No finer nor more magnificent instrument made anywhere in the world—regardless of cost. A veritable collector's item that will enhance the decor of any man's office, home or den. Three different gauges give super sensitive, accurate Barometer readings, Humidity and Temperature. Measures 7 1/4" in diameter. Entire unit is richly engraved with gold stamped pearl finished dials. Has a hook for hanging on mantel or wall or it can be set on table or desk via taste-fully wrought pedestal. Gift boxed. **\$21.95**

6 for \$123.00 ppd.

GUARANTEED WITTHAUER WEATHER "KEY" INSTRUMENTS

An Exotic Offering from the Orient "Live" Butterfly & Bamboo COASTER SET



Not just another coaster set, but a symphony of natural beauty and oriental craftsmanship. Decorative Holder and 6 Coasters are completely hand-made of select pieces of highly polished genuine bamboo. Base of each coaster contains a richly hued, attractive, "live" butterfly perfectly laminated between two pieces of glass. Roughest usage, in water or out, will not harm the gorgeous "live" butterflies. Complete Set **\$5.95**

(6 Sets \$32.70 ppd.) ppd.

Windproof, Waterproof, Flameless, Fuelless Pocket Size SOLAR CIGARETTE LIGHTER



Merely insert a cigarette in scientifically designed parabolic pocket-sized reflector and in just a few seconds your cigarette is lit. No PUFFING IS REQUIRED! Perfect for all outdoors—camping, fishing, beach and boats. Guaranteed to amaze and amuse you—and your friends! Also works thru sunny windows indoors **\$1.00**

(3 for \$2.75) ppd.

Hand Wrought Silver Tone Letter Opener & Paper Weight

Authentic Replicas of Michelangelo's DAVID



Complete Set—\$4.95 ppd.
(6 Sets Above—\$26.70 ppd.)

Created for us by skilled artisans at a little foundry in Florence, Italy. The letter opener, 7 1/2" long, is topped by a replica of the original statue of DAVID as sculptured by the famed Michelangelo in 1499. Opener fits snugly into curved metal sheath. Ingenious silver tone hand finishing makes the entire piece look and feel like pure sterling. Accompanying paper weight, 4" in diameter, has a heavily embossed head of Michelangelo's DAVID with the words "David by Michelangelo, Florence, Italy." The set is almost completely hand made and no two sets are ever exactly alike. Packed in attractive gift box with authenticating certificate and gift card.

World's Most Unusual — Most Dependable Lighter

LIGHT-O-MATIC

Lift Up — It's Lit! Set Down — It's Out!

Unique and striking in appearance—styled for the connoisseur. A "conversational piece" to decorate the executive desk or home coffee table—really practical, too! Merely lift it and IT'S LIT—place it back and IT'S OUT! One filling lasts a full 6 months or more. Precision made by skilled craftsmen to last a lifetime. Beautifully gift boxed. Measures 3" x 2 1/4" x 1 1/2".

THE FLOWER JEWEL—Enchanting silver filigree with raised floral design and 20 multi-colored, faceted gems that cast a glorious rainbow reflection. A veritable heirloom piece. **\$18.95 ppd.**
(6 for \$107.70 ppd.)



THE COACHMAN—In nickel or gold—heavily embossed classic design. . . . **\$14.95 ppd.**
(6 for \$88.70)

The Perfect Organizer for the Busy Executive!

CALENDAR MEMO PAD

In Hand-made, Embossed Florentine Leather Folder
• Florentine Leather Cover
• Over 200 "Live" Memo Slips
• Dated Page for Every Day of Week
• Weekly Expense Record
PLUS 2 EXTRA "LIVE" MEMO PADS—a total of well over 600 slips

You can only appreciate the beauty and value of this complete Organizer when you have it before you. Measuring a "desk handy" 11" x 11 1/2" when open, it folds to lend a distinctive touch on desk at office or home. Full cover is Hand Crafted in Italy of embossed Florentine Leather. Edges are perforated and hand stitched. The cover is moire lined with full width pockets in top and bottom flaps for handy storage of memos. A . . . **\$35.95**

(6 for \$32.70 — 12 for \$60 ppd.)

FREE—Individual imprinting of names in gold on quantities of 12 or more.

IMPORTANT

Order Today and Save. Send Check or M.O. C.O.D. orders plus fee. Money Back Guarantee. Protects you against risk.



Hand Painted, Genuine Imported China
MALLARD LIGHTER & ASHTRAYS SET

A Gift to Give or Get at Office or Home

Here's an opportunity to do away with the dull and ordinary—to add charm and beauty to normally mundane ash trays and cigarette lighter so essential to office and home. Genuine, rich, gleaming white China lighter stands 4" high with both sides tastefully hand painted in lustrous color with scenes of mallards in flight. The two deep ashtrays with fluted ends to hold cigarettes carry same hand painted designs. A really beautiful set worth far more than its exceedingly low price **\$3.95**

(6 Sets \$20.70 ppd.) ppd.

Water ON or OFF at SAME TEMPERATURE — SAME PRESSURE

with Elgin

SHOWER ECONOMIZER

Saves Water, Fuel, Money!



Set your shower to temperature and pressure desired—then shut it off by a slight tug of the "Economizer" chain. After you're all soaped up, another gentle tug of the chain restores the EXACT same temperature and pressure as before! Fits all showers, screws on in a minute. Made of solid brass—heavy chrome plated. Unconditionally guaranteed for 3 years—precision made to last a lifetime! Perfect for homes, resorts, schools, hotels, motels, apartment houses, institutions, trailers. **\$3.95**

plus 35¢ pp. & hdlg.
(3 for \$10.85—plus 50¢ pp. & hdlg.)

Extra Large, Sensitive, Cast Aluminum Remington WEATHER VANE



Not only designed to give precise wind direction, but adds a distinctive note of beauty to every American home. Newly designed and precision engineered from strong cast, non-rusting aluminum. Has full 21" classic arrow with your choice of 8 eye-catching three-dimensional ornaments. Wind direction indicators—N—E—S—W—are all three-dimensional. Exclusive Universal Mount provides for sturdy permanent attachment of vane to any shape roof in a jiffy. All vanes finished in gleaming black. Height of vanes vary from 27 1/2" to 30". Ordering, specify ornament desired **\$9.98**

Any 6 for \$56.88 ppd. ppd.



SCOTT-MITCHELL HOUSE, Inc.

Dept. 24-J — 415 South Broadway, Yonkers, New York

THE LIGHT THAT NEVER FAILS!

RECHARGEABLE FLASHLITE



A Flashlite that never needs batteries. Weighs only 3½ ounces. Gives a bright clear light. Will last forever because it is equipped with non-corrosive-hermetically sealed storage batteries. Easy to operate.



Simply snap off cap—Plug into any A.C. outlet (up to 250 volts)

Cannot overcharge. Lamp head is off while recharging takes place. Full recharge can be done overnight. Only 20 Milli Amps are required. Complete with instructions.

Special \$4.95 Postpaid

JOHN SURREY Ltd., Dept. SN-75, 11 W. 32nd St., New York 1, New York

Questions

BIOLOGY—Why are there so few fish in the Sargasso Sea? p. 218.

GEOPHYSICS—What is the world's lowest recorded temperature? p. 216.

PHYSICS—Why is lithium-6 lighter than lithium-7? p. 212.

Photographs: Cover, American Optical Company; p. 211, The Randall Corporation; p. 213, Chrysler Corporation; p. 215, Indiana University; p. 218, Bermuda News Bureau; p. 224, Sta-Dri Products Co.

BIOLOGY

Regenerating Nerve Cell's Protein Fluctuates

► **STUDIES** of regenerating nerve cells, tracing the ups and downs of the cell's use of protein, are reported by a team of Swedish researchers.

First, the scientists report in *Nature* (Sept. 20), there is a "latent period" when a small part of the nerve close to the spot where the cells were crushed degenerates. The amount of protein in each cell dropped by 30% to 40% at this stage.

At the same time, the incorporation of lysine, one of the most biologically important amino acids, into regenerating cells exceeded the control cells' uptake by 70%.

During the "outgrowth period," when the regenerating nerve cells were rapidly growing, there was a 100% increase in the proteins per cell. The incorporation of lysine into the cells was found to increase by 200%.

Changes in the protein used by the regenerating cells' ribonucleic acid (RNA) followed a different pattern. When chromatolysis—the solution and breaking up of chromatin, the protein compounds believed to be the physical basis of heredity—occurred, protein incorporation increased by 100%. This took place on the eighth day after the cells were crushed.

The researchers used carbon-14 as tracer material to follow the regenerating cells' use of the lysine and orotic acid. Orotic acid, a protein isolated from milk, was studied in the transformation of RNA from a less active to a more active form.

S.O. Brattgard, H. Hyden and J. Sjostrand of the University of Goteborg's department of histology reported the research.

Science News Letter, October 4, 1958

Do You Know?

The nervous system plays an important role in maintaining the body's blood pressure, not only through its influence on the pumping heart, but through its part in causing blood vessel walls to contract or expand.

Lipizzaners, Austria's famous white performing horses, are born dark; they acquire their white coats between three and seven years old.

SEND FOR Free Record

START SPEAKING FRENCH SPANISH ALMOST OVERNIGHT!

HERE'S the easiest way to learn FRENCH, SPANISH, Russian, German, Italian, Japanese or Brazilian. Listen to FREE 3-sided non-breakable record. Let your eyes follow words in FREE sample lesson. Almost at once you'll be chatting in a new language with a perfect accent! That's all you hear! No dull, tedious work. Just listen—imitate! It's that easy! Offer may end soon. Rush 25¢ to help cover cost of special packaging, shipping. State language you want. We'll also send free information on full Cortina course. No obligation. CORTINA ACADEMY, Dept. 6010, 130 W. 52nd St., New York 19.

EXPERT WATCH REPAIRING

Your watch makes 16,000 beats per hour and, naturally, it needs periodical cleaning and re-oiling approximately every 12 or 18 months. Whatever the MAKE, whatever the AGE, any watch or clock is SAFE in the hands of:

BERNARD SAMTER

Certified Swiss Watch Technician

55 West 42nd Street New York City
Room 1453 LOnacre 4-6353

Full year guarantee • Efficient and rapid mail service • Estimate supplied for every watch.

NICE CAR deserves a NEW Kozak

BARGAIN OFFER: One \$3 regular and one \$4 SUPER Auto DRYWASH cloths—\$7 value for \$5. Safely wiping and DRYwashing nice cars for 33 years. Save their cost dozens of times. Guaranteed. Kozak, 154 S. Lyon St., Batavia, N. Y.

AMAZING STAR FINDER Helps You Identify 135 Stars!



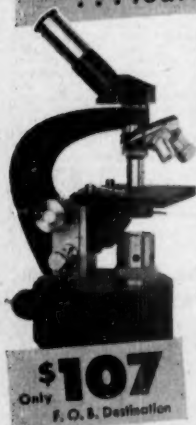
Now an amazing new optical instrument takes the guesswork out of finding the stars! The Star Finder projects 20 different charts into the sky so you can identify 135 stars and 45 constellations. Not a gadget. Absorbing, accurate, educational for children and adults. Basic information helps a scout earn his astronomy badge with ease. No technical knowledge required.

A fascinating gift for anyone, any age! Makes a perfect family-interest project. Instructions included.

ORDER BY MAIL NOW POSTPAID
Send cash, check or M.O. Satisfaction Guaranteed
DAMAR'S, 75-J Damar Bldg., Elizabeth, N. J.

ONLY \$1.98

UNITRON'S Model MSA makes teaching easier ... learning faster!



Here is a teaching microscope with built-in features to aid the instructor and student, yet priced for school budgets.

- Inclined prismatic eyepiece rotates 360° permitting two students or teacher and student to share the instrument
- Built-in low-voltage illuminating system, fixed condensing lens ... Transformer conveniently housed in base ... accessory mirror included ... cabinet
- Substage condenser with aperture iris diaphragm ensures correct and brilliant illumination at all powers ... filter on swing-out mount
- All metal construction with durable black and chrome finish
- Low positioned coarse and fine focusing controls with protective stops to prevent damage to objectives or slides
- Three parfocal achromatic objectives 4X, 10X, 40X; professional quality with full numerical aperture ... triple nosepiece ... three eyepieces 5X, 10X, 15X ... available magnifications—20X, 40X, 50X, 60X, 100X, 150X, 200X, 400X, 600X

\$107
Only
F. O. B. Destination

In lots of 25 — only \$94.16 FREE 10-DAY TRIAL

UNITRON

INSTRUMENT DIVISION OF UNITED SCIENTIFIC CO.
204-206 MILK STREET • BOSTON 9, MASS.

Please rush UNITRON'S Microscope Catalog 53-1

Name _____
Company _____
Address _____
City _____ State _____

Make over 150 Small
Computing and Reasoning
Machines with . . .

BRAINIAC®

A BETTER ELECTRIC BRAIN CONSTRUCTION KIT

EQUALS THE ORIGINAL GENIAC® electric brain construction kit (1955) PLUS many improvements and additions: over 600 parts—including 116 improved patented wipers so that all switches work well. Instead of covering only 33 machines, BRAINIAC gives full specifications for 151 computing, reasoning, arithmetical, logical puzzle-solving and game-playing machines . . . all 33 GENIACS (1955), 13 TYNIACS (1956), and 105 BRAINIACS (1957-58), etc.

THIS IS BRAINIAC! With our Brainiac Kit K17, you can build over 150 small electric brain machines and toys which "think," compute, reason, and display intelligent behavior. Each one works on a single flashlight battery . . . is FUN to make, FUN to use and play with, and TEACHES you something new about electrical computing and reasoning circuits. All connections with nuts and bolts—no soldering required. Originated and produced exclusively by Berkeley Enterprises, Brainiac is the result of 8 years' design and development work with miniature mechanical brains including: Geniac (see "Geniacs: Small Electric Brain Machines and How to Make them" by Edmund C. Berkeley, 64 pp., published by Geniac Project, a partnership with Oliver Garfield discontinued September 1955), Tyniac (1956), Relay Moe (automatic relay machine playing tit-tat-toe—pictured in Life Magazine, March 19, 1956), Simon (miniature automatic digital computer with 129 relays—see "Simple Simon" by E. C. Berkeley in Scientific American, November 1, 1950), Squee (electronic robot squirrel—see "Light Sensitive Electronic Beast" by E. C. Berkeley in Radio Electronics, Dec. 1951), etc.



WHAT CAN YOU MAKE WITH BRAINIAC KIT K17?

Over 150 machines including—**LOGIC MACHINES:** Syllogism Prover, Intelligence Test, Boolean Algebra Circuits, Douglas MacDonald's Will Analyzer, A Simple Kalin-Burkhart Logical Truth Calculator, etc. **GAME-PLAYING MACHINES:** Tit-Tat-Toe, Nim, Wheeled Bandit, Black Match, Sundorra 21, etc. **COMPUTERS:** To add, subtract, multiply or divide using decimal or binary numbers, Forty-Year Calendar, Prime Number Indicator, Money-Changing Machine, etc. **CRYPTOGRAPHIC MACHINES:** Coders, Decoders, Lock with 15,000,000 Combinations, etc. **PUZZLE-SOLVING MACHINES:** The Missionaries and the Cannibals, Age-Guessing Machine, Submarine Rescue Chamber, Daisy Petal Machine, Fox-Hen-Corn & Hired Man, Uranium Space Ship and the Space Pirates, The Three Monkeys Who Spurned Evil, General Alarm at the Fortress of Dreadreerie, etc. **QUIZ MACHINES:** History, geography, trigonometry, grammar, statistics, calculus, etc.

WHO IS EDMUND C. BERKELEY? Author of "Giant Brains or Machines That Think," Wiley, 1949, 270 pp. (13,000 copies sold); author of "Computers: Their Operation and Applications," Reinhold, 1956, 366 pp.; Editor & Publisher of the magazine, *Computers and Automation*; Maker and Developer of small robots; Fellow of the Society of Actuaries; Secretary (1947-53) of the Association for Computing Machinery; Designer of all the Tyniacs and Brainiacs, more than half of the 33 Geniacs (1955); Designer of the Multiple Switch Disc and other features in the 1955 Geniac kit.

WHAT COMES WITH YOUR BRAINIAC KIT . . .

Complete Plans, Instructions, Explanations & Hardware:

- Every part needed to build Geniacs, Tyniacs, Brainiacs—over 600 pieces including control panel, multiple switch discs, jumpers, improved wipers, bulbs, sockets, washers, wire, battery and special tools.
- Complete descriptions of 151 experiments and machines.
- Over 160 circuit diagrams including 46 exact wiring templates.
- Manual "Tyniacs: Small Electric Brain Machines and How to Make Them" by Edmund C. Berkeley, 1956, 48 pages—includes Introduction to Boolean Algebra for Designing Circuits.
- "How to Go from Brainiacs and Geniacs to Automatic Computers" by Edmund C. Berkeley.
- Dr. Claude E. Shannon's historic 1938 paper given before the American Institute of Electrical Engineers: "A Symbolic Analysis of Relay and Switching Circuits," 12 pages.
- List of references to computer literature including "Minds and Machines" by W. Sluckin, published by Penguin Books (Baltimore), 1954, 233 pages and other references.

only **\$17.95** . . . why pay more?

BRAINIAC KIT (1958 Model) K17 . . . the kit with limitless possibilities—backed by an organization of 10 years standing in the computer field—\$17.95 (For shipment west of Mississippi, add 80¢; outside U. S. add \$1.80)

7-Day Full Refund Guarantee If Not Satisfactory

MAIL THIS COUPON

BERKELEY ENTERPRISES, Inc.
815 Washington St., R159, Newtonville 60, Mass.

Please send me Brainiac Kit K17. (Returnable in 7 days for full refund if not satisfactory—if in good condition.) I enclose \$_____ in full payment.

Name _____

Address _____

City _____ State _____

• New Machines and Gadgets •

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE NEWS LETTER, 1719 N St., N.W., Washington 6, D. C., and ask for Gadget Bulletin 955. To receive this Gadget Bulletin without special request each week, remit \$1.50 for one year's subscription.

❁ **SHOWER CAP** made from a transparent film of a polyethylene plastic can be re-used or thrown away. The caps are waterproof and sufficiently resilient to fit almost any head or hairdo. They can substitute for damp-clothes carriers, book protectors and even lunch bags.

Science News Letter, October 4, 1958

❁ **POP-UP NOZZLE HEAD** for an underground lawn sprinkler system is non-clogging. The head gives off a spray that can be controlled and operated automatically. Each head covers a 24-foot circle at normal pressures. The head is designed to pop up when the faucet is turned on and drop down when shut off.

Science News Letter, October 4, 1958

❁ **MAP MEASURE** is a combination pencil, compass, magnifying glass and tracer that shows map mileage. The scale is designed to convert miles to inches and centimeters to kilometers. The travel aid comes in a leather case complete with operating instructions. It is imported from Germany.

Science News Letter, October 4, 1958

❁ **SPACE HELMET** for junior earth-bound explorers has goggles molded in. Radar antennas on the front of the goggles, as well as a disk inside a sphere, revolve.



The space helmet, shown in the photograph, also has elastic chin and head straps. It is made of a styrene plastic.

Science News Letter, October 4, 1958

❁ **SAFETY HANDLE** for rubber buckets is made of stainless steel. It is attached with stainless steel clips, becoming a free-swinging but permanent part of the bucket structure.

Designed for handling acids, corrosives and alkalis, the safety handle is available in both hard and soft rubber bucket styles.

Science News Letter, October 4, 1958

❁ **WORKBENCH TOOL** combines pliers with a wrench. It has a ten to one ratio jaw-to-handle leverage, one-ton gripping power, a geared transmission, automatic jaw lock and plastic handle covers. It can be used as a socket and angle wrench, clamp, vise, ratchet, wire or pipe wrench, and spring maker.

Science News Letter, October 4, 1958

❁ **ACRYLIC LEVEL** is described as virtually indestructible. The level is one and five-eighths inches in diameter. It can be pocket-carried or mounted on equipment through holes in its flange. Its accuracy is within 60 degrees of arc.

Science News Letter, October 4, 1958

❁ **CONTROL ENGINEER'S SLIDE RULE** gives magnitude ratio and phase response angle in one setting. The rule applies to transfer functions that are products of linear and exponential factors. Scales for direct conversion from decibels to actual magnitude and from angular frequency to frequency or period time are also provided.

Science News Letter, October 4, 1958



Nature Ramblings



By HORACE LOFTIN

► "OH, GIVE me a home where the buffalo roam, where the deer and the antelope play . . ."

Where would such a home be? Any student of natural history could tell you that it certainly is not in the American West. In the first place, there are no buffaloes in America; in the second place, there are no antelopes either.

The American "buffalo" is actually a bison, distinguished, among other features, from true buffaloes by the hump over its shoulders. Our "antelope," the pronghorn, is in a completely different family from the true antelopes which have permanent, non-branched horns. The pronghorn sheds his many-pointed horns each year.

It is necessary to look elsewhere for the American "home on the range."

The combination of buffalo, deer and antelope is found in two places, Africa and Asia, so this narrows the field. In Africa,

Home on the Veldt



deer are not found south of the Tropic of Cancer, ruling out that continent for practical purposes. Much farther south there are herds of antelope and the fierce Cape buffalo.

Asia meets the requirements. Here are several species of deer, the classic water buffalo, both wild and domesticated, and many antelopes. To pinpoint this "home," India fits the bill most closely, perhaps some wild stretch where jungle, mountain and plain come near one another.

Sticking to the hard facts of zoo-geography, it is necessary to choose India as the best bet for such a rigorously defined spot. But if it could not be the American West, it is somewhat a shame that it could not be the equatorial veldt area of Africa.

The rolling hills of East Africa teem with antelopes of all sizes and descriptions, from which a homesick westerner could reconstruct the western fauna. For the old bison herds, there are the shaggy, fierce-tempered gnus. Any of a number of antelopes could fill in for the pronghorn. Deer could be replaced by the fleet gazelles or the retiring waterbuck.

Our common American names "buffalo" and "antelope" were borrowed directly from the Old World animals by the settlers of the New World. They were on unfamiliar ground and were seeing unfamiliar life. The old names brought them something of home, of the familiar.

Is there a song, "home, home on the veldt?"

Science News Letter, October 4, 1958

